

IN THE CLAIMS:

- 1 1. (Currently amended) A data collection apparatus, comprising:
- 2 a sensing unit for attaching to a structure or live subject ~~for sensing a~~
3 ~~parameter of the structure or live subject~~, said sensing unit comprising a
4 sensor, a first data storage device, a first receiving device, and a first
5 transmitting device, said first data storage device for storing data from said
6 sensor, said first transmitting device for transmitting data derived from
7 said sensor;
- 8 a control unit separable from said sensing unit, said control unit
9 comprising a data receiving device, a second transmitting device, and a
10 second data storage device different from said first storage device, said
11 data receiving device to receive data transmitted from said ~~data~~ sensing
12 unit, said second data storage device for storing said data received from
13 said sensing unit wherein said sensing unit is configured so a real time
14 signal from said control unit to said sensing unit can trigger a change in
15 sensor data handling, sensor data collection, or sensor data storage in said
16 sensing unit or sensor data transmission from said sensing unit; and
- 17 ~~a triggering device for modifying the storing of data being stored to said~~
18 ~~first data storage device or for initiating transmission of data from said~~
19 ~~sensing unit to said control unit, wherein said triggering device is~~
20 ~~controlled by a real time change in information about the structure or live~~
21 ~~subject.~~

1 2. (Currently amended) The apparatus as recited in claim 1, wherein said sensor
2 comprises one from the group, an accelerometer, a displacement sensor, a strain
3 gauge, a pressure gauge, a thermometer, a flow monitor, a heart monitor, an EKG,
4 an EMG, an EEG, a blood monitor, a force gauge, a humidity monitor, a growth
5 rate monitor, a ripeness monitor, a light intensity gauge, a radiation detector, a
6 chemical detector, a corrosion detector, or and a toxic monitor.

1 3. (Currently amended) The apparatus as recited in claim 2, wherein said sensor
2 comprises an array of said accelerometers.

1 4. (Original) The apparatus as recited in claim 2, wherein said sensor comprises a
2 linear or angular accelerometer.

1 5. (Original) The apparatus as recited in claim 2, wherein said sensor comprises a
2 resistive accelerometer or a piezoelectric accelerometer.

C4 1 6. (Original) The apparatus as recited in claim 1, wherein said sensor is for detecting
2 vibration.

1 7. (Original) The apparatus as recited in claim 1, wherein said sensing unit is for
2 attaching to an architectural structure or to a vehicle.

1 8. (Currently amended) The apparatus as recited in claim 1, wherein said data
2 sensing unit is for wearing by the live subject.

1 9. (Currently amended) The apparatus as recited in claim 1, wherein said data
2 sensing unit is for implanting in the live subject.

- 1 10. (Currently amended) The apparatus as recited in claim 9, further comprising a
2 hermetically sealed housing, wherein said ~~sensor~~ sensing unit is located in said
3 sealed housing.
- 1 11. (Original) The apparatus as recited in claim 10 wherein said housing comprises
2 titanium or ceramic.
- 1 12. (Currently amended) The apparatus as recited in claim 10, wherein said sensing
2 unit further comprises an antenna, wherein ~~an~~ said antenna extends outside said
3 housing and is connected to ~~a receiver~~ said first receiving device or to said first
4 transmitting device ~~transmitter~~ within said housing through a penetration in said
5 housing.
- 1 13. (Currently amended) The apparatus as recited in claim 1, wherein said sensing
2 unit further comprising comprises a microprocessor.
- C1 1 14. (Currently amended) The apparatus as recited in claim 13, wherein said
2 microprocessor is ~~in said sensor unit and wherein~~ connected to said first storage
3 device, said first transmitting device, and to said first receiving device is
4 connected to said receiver and to said sensor through said microprocessor.
- 1 15. (Currently amended) The apparatus as recited in claim 13, wherein said
2 microprocessor comprises ~~said a~~ triggering device for modifying the storing of
3 data being stored to said first data storage device or for initiating transmission of
4 data from said sensing unit to said control unit, wherein said triggering device is
5 controlled by a real time change in information about the structure or live subject.
- 1 16. (Currently amended) The apparatus as recited in claim 1, wherein said ~~sensor~~
2 sensing unit further comprises a power supply.

- 1 17. (Original) The apparatus as recited in claim 16, wherein said power supply
2 comprises a rechargeable battery or fuel cell.
- 1 18. (Original) The apparatus as recited in claim 17, further comprising a circuit for
2 recharging said battery by inductive coupling.
- 1 19. (Original) The apparatus as recited in claim 18, further comprising a hermetically
2 sealed housing, wherein said sensor and said circuit for recharging is in said
3 housing and said coupling is through said housing.
- 1 20. (Currently amended) The apparatus as recited in claim 18, wherein said circuit for
2 recharging is in the said housing and an antenna for said the coupling is located
3 outside the said housing.
- 1 21. (Currently amended) The apparatus as recited in claim 1, wherein said sensing
2 unit further first receiving device comprises an RF receiver for receiving a said
3 real time signal from ~~said triggering device~~.
- C1 1 22. (Currently amended) The apparatus as recited in claim 1, wherein said first
2 transmitting device is includes an RF transmitter.
- 1 23. (Original) The apparatus as recited in claim 1, wherein said sensing unit includes
2 a clock, wherein said control unit includes a time reference, and wherein said
3 second transmitting device is capable of sending a timing signal to said sensor
4 unit for synchronizing said clock to said time reference.
- 1 24. (Original) The apparatus as recited in claim 23, wherein said timing signal is for
2 synchronizing a plurality of said sensors or for synchronizing a sensor with
3 another apparatus.

- 1 25. (Original) The apparatus as recited in claim 23, wherein said first storage device is
2 connected to receive and record said timing signal.
- 1 26. (Original) The apparatus as recited in claim 1, wherein said first data storage
2 device continually records.
- 1 27. (Cancel) The apparatus as recited in claim 1, wherein said first storage device is
2 controlled by data received by said sensor.
- 1 28. (Original) The apparatus as recited in claim 27, wherein when said data received
2 by said sensor reaches a threshold, data in said first storage device is retained.
- 1 29. (Original) The apparatus as recited in claim 28, wherein said retained data
2 includes data received after said sensor reaches said threshold.
- CA 1 30. (Currently amended) The apparatus as recited in claim 1, wherein said sensing
2 unit further comprising includes a feedback device for adjusting said parameter
3 based on said data.
- 1 31. (Cancel) The apparatus as recited in claim 30, wherein said feedback device is
2 located in said sensing unit.
- 1 32. (Currently amended) The apparatus as recited in claim 30, further comprising a
2 sensor capable of detecting excessive vibration, wherein said feedback device is
3 an active damping element to reduce vibration in response to measured excessive
4 vibration.

- 1 33. (Cancel) The apparatus as recited in claim 30, wherein said feedback device is an
2 active damping element to reduce vibration in response to measured excessive
3 vibration.
- 1 34. (Original) The apparatus as recited in claim 1, wherein said second data storage
2 device comprises a computer.
- 1 35. (Original) The apparatus as recited in claim 1, wherein said control unit further
2 comprises a device to signal a user that data exceeding a preset threshold has been
3 reached.
- 1 36. (Cancel) The apparatus as recited in claim 1, wherein said control unit further
2 comprises a transmitter.
- 1 37. (Cancel) The apparatus as recited in claim 36, wherein said control unit comprises
2 said device to trigger said sensing unit through said transmitter.
- 1 38. (Currently amended) The apparatus as recited in claim 1, further comprising a
2 plurality of sensing units, wherein said ~~control unit~~ is capable of sending second
3 transmitting device is connected to send address information to said sensor
4 sensing units ~~unit~~ to activate all sensing units, to activate specific sensing units
5 based on the addresses of the individual sensing units or to communicate with an
6 individual sensor sensing unit of a said plurality of sensor sensing units.

- 1 39. (Currently amended) A method of collecting data, comprising the steps of:
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- 3 a) providing a sensing unit for attaching to a structure or live subject
- 4 ~~for sensing a parameter of the structure or live subject~~, said sensing
- 5 unit comprising a sensor, a first data storage device, a first
- 6 receiving device, and a first transmitting device, said first data
- 7 storage device for storing data from said sensor, said first
- 8 transmitting device for transmitting data derived from said sensor;
- 9
- 10 b) providing a control unit separable from said sensing unit, said
- 11 control unit comprising a second data receiving device and a
- 12 second data storage device different from said first storage device,
- 13 said second data receiving device to receive data transmitted from
- 14 said data sensing unit, said second data storage device for storing
- 15 transmitting a real time signal to said first receiving device to
- 16 trigger a change in sensor data handling, sensor data collection, or
- 17 storage of sensor data in said first sensing unit; and
- 18 d) triggering transmitting data from said first sensing unit to said data
- 19 receiving device.
- 20 ~~c) providing a trigger signal for modifying the storing of data being~~
- 21 ~~stored to said first data storage device or for initiating transmission~~
- 22 ~~of data from said sensing unit to said control unit, wherein said~~
- 23 ~~trigger signal is a real time change in information about the~~
- 24 ~~structure or live subject.~~

1 40. (Currently amended) A data collection apparatus, comprising a network of
2 addressable sensing units and a control unit, said sensing units for attaching to at
3 least one structure or at least one live subject, ~~said sensing units for sensing a~~
4 ~~parameter of the at least one structure or at least one live subject~~, said sensing
5 units each comprising a sensor, an addressable microprocessor, a first data storage
6 device connected to said microprocessor, a first transmitting device and a first
7 receiving device, wherein said sensing units is configured so a real time signal
8 from said control unit to said sensing unit can trigger a change in data handling,
9 data collection, or data storage in said sensing unit or sensor data transmission
10 from said sensing unit.

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1 41. (Currently amended) The apparatus as recited in claim 40, ~~further comprising a~~
2 wherein said control unit is separable from said sensing units, further wherein said
3 control unit ~~comprising a second transmitter; comprises~~ a second receiver[,] and
4 a second data storage device for storing data received from said plurality of
5 sensing units.

1 42. (Currently amended) The apparatus as recited in claim 41, wherein said control
2 unit can transmit address information to activate all sensor units or to activate
3 specific sensor units, or to activate one of said sensor units.

1 43. (Previously presented) The apparatus as recited in claim 41, wherein said control
2 unit can provide an address to query each sensor unit individually.

1 44. (Previously presented) The apparatus as recited in claim 41, wherein said second
2 transmitting device is for transmitting a timing signal for synchronizing said
3 plurality of sensing units.

- 1 45. (Currently amended) The apparatus as recited in claim 40, wherein said
2 microprocessor can query, activate, or send timing information to each sensor of
3 said sensing unit individually or to can activate all sensors at once.
- 1 46. (Currently amended) The apparatus as recited in claim 40, wherein said sensor
2 units further comprise a signal conditioner, and an A/D converter, and a clock for
3 microprocessor functions and to track time.
- 1 47. (Currently amended) The apparatus as recited in claim 40, wherein said first data
2 storage device is connected to said first transmitting device for transmitting data
3 to said control unit when a signal triggering transmission is received.
- 1 48. (Previously presented) The apparatus as recited in claim 40, wherein said first
2 transmitter and said second transmitter are wireless transmitters.
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- 1 49. (Previously presented) The apparatus as recited in claim 40, further comprising a
2 triggering device for modifying the storing of data being stored to said first data
3 storage device or for initiating transmission of data from said plurality of sensors
4 to said control unit, wherein said triggering device is controlled by a real time
5 change in information about the structure or live subject.

1 50. (Currently amended) A data collection apparatus, comprising:

2 a plurality of sensing units for attaching to at least one structure or at least
3 one live subject, ~~said sensing units for sensing a parameter of the at least~~
4 ~~one structure or at least one live subject~~; said sensing units each
5 comprising a sensor, a first data storage device, a first transmitting device
6 and a first receiving device; and

7
8 a control unit separable from said sensing units, said control unit
9 comprising a second transmitting device, a second receiving device, and a
10 second data storage device, for transmitting a timing signal for
11 synchronizing said plurality of sensing units, a second receiver, and a said
12 second data storage device for storing data received from said plurality of
13 sensing units, wherein each of said sensing units is configured so a real
14 time signal from said control unit to said sensing unit can trigger
15 transmitting data derived from said sensor by said first transmitting device.

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1 51. (Currently amended) The apparatus as recited in claim 50, wherein said sensor
2 units are each further comprise an addressable microprocessor, and wherein said
3 control unit second transmitting device is further for transmitting timing and
4 address information to said sensor units.

1 52. (Currently amended) The apparatus as recited in claim 51, wherein said address
2 information is to activate all sensor units or to activate specific sensor units based
3 on the address of the individual sensor unit.

1 53. (Currently amended) The apparatus as recited in claim 51, wherein said control
2 unit can provide an address to query each sensor unit individually.

1 54. (Currently amended) The apparatus as recited in claim 50 51, wherein said sensor
2 units each further comprise a microprocessor plurality of sensors wherein said
3 microprocessor can query~~[[,]]~~ or activate, or send timing information to each of
4 said sensors ~~sensor~~ individually or to all said sensors at once.

1 55. (Cancel) The apparatus as recited in claim 54, wherein said microprocessor is
2 addressable.

1 56. (Currently amended) The apparatus as recited in claim 54 51, wherein said sensor
2 units each further comprise a signal conditioner~~[[,]]~~ and an A/D converter, ~~and a~~
3 clock.

1 57. (Currently amended) The apparatus as recited in claim 54 51, wherein said
2 microprocessor controls storage to said first data storage device.

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1 58. (Currently amended) The apparatus as recited in claim 50, wherein said first
2 transmitting device can transmit data from said first storage device to said control
3 unit.

1 59. (Previously presented) The apparatus as recited in claim 59 50, wherein said
2 second data receiving device and second data storage device are for receiving and
3 storing said data transmitted to said control unit.

1 60. (Currently amended) The apparatus as recited in claim 50, wherein said first
2 transmitter transmitting device and said second transmitter transmitting device are
3 wireless transmitters.

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1 61. (Previously presented) The apparatus as recited in claim 50, further comprising a
2 triggering device for modifying the storing of data to said first data storage device
3 or for initiating transmission of data from said sensing unit to said control unit,
4 wherein said triggering device is controlled by a real time change in information
5 about the structure or live subject.

1 62. (New) The apparatus as recited in claim 1, further comprising a host computer,
2 wherein said control unit is connected to said host computer.

1 63. (New) The apparatus as recited in claim 1, wherein a user operating on said host
2 computer can send a signal to trigger data collection.

1 64. (New) The apparatus as recited in claim 1, further comprising a triggering device
2 for modifying the storing of data being stored to said first data storage device or
3 for initiating transmission of data from said sensing unit to said control unit,
4 wherein said triggering device is controlled by a real time change in information
5 about the structure or live subject.

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1 65. (New) The apparatus as recited in claim 10, wherein said sensing units is
2 configured so a real time signal from said control unit to said sensing unit can
3 trigger a change in data handling, data collection, or data storage in said sensing
4 unit and sensor data transmission from said sensing unit.

1 66. (New) The method as recited in claim 39, wherein in said triggering step (d) said
2 triggering transmitting data step is provided by a trigger signal generated within
3 said sensing unit or by a trigger signal received from said control unit.

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- 1 67. (New) The apparatus as recited in claim 40, wherein said sensing units is
2 configured so a real time signal from said control unit to said sensing unit can
3 trigger a change in data handling, data collection, or data storage in said sensing
4 unit and sensor data transmission from said sensing unit.
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